



D-BLM-K67036-NV

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

July 10, 1996

960222
EO-2

Gerald Smith, District Manager
Battle Mountain District
Bureau of Land Management
P.O. Box 1420
Battle Mountain, NV 89820

Dear Mr. Smith:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the Mule Canyon Mine, Lander and Eureka Counties, Nevada. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and Clean Air Act Section 309.

The DEIS evaluates alternatives for a gold mining project, which involves excavation of five pits, construction and operation of heap leach facilities, 12 to 14 overburden and interburden disposal piles, a possible mill and tailings impoundment (to be determined at a later date), ore stockpiles, haul roads, and ancillary facilities. Alternatives to the preferred design (Alternative B) which are considered in detail vary the access route (Alternative C) and configuration of the permanent overburden and interburden disposal structures (Alternative D). Alternative locations, mining methods, and complete backfilling (Alternatives E-G) were judged infeasible and eliminated from detailed analysis.

We have rated this DEIS as EO-2 -- Environmental Objections-Insufficient Information (see the enclosed "Summary of Rating Definitions and Follow-Up Actions"). Our objections to the proposed project are based on its potential to adversely affect surface water and groundwater if facilities are not designed adequately. Our rating is also based on the need for additional information in the Final Environmental Impact Statement (FEIS) regarding the impacts of transporting ore to Twin Creeks mine for milling; the results of the ecological risk assessment; the selection of options for pit backfilling and waste rock pile design; design parameters for several mining and processing

General Comments

The DEIS's discussion of milling facilities for Mule Canyon ore is somewhat confusing. The document states that until production economics justify construction of milling facilities at Mule Canyon, ore would be hauled by truck to the Twin Creeks Mine mill over 85 miles away (p. 2-43). Although Mule Canyon ore would be processed at Twin Creeks for at least part of the duration of the project, the DEIS does not address the potential impacts associated with hauling 2,200 tons of ore per day in 55 round-trips to Twin Creeks or with milling and disposing of tailings there. BLM uses Interstate 80 as the project impact boundary, beyond which project impacts are not considered, except in the case of air resources. The DEIS (p. 4-77), however, describes the air impacts associated with transportation of ore to Twin Creeks as indirect impacts.

Milling at Twin Creeks is an integral component of the proposed Mule Canyon Project. The impacts related to transporting, milling and disposing of ore at Twin Creeks would be direct impacts of the proposed project, as defined at 40 CFR 1508.8, and need to be addressed in the Mule Canyon FEIS. The FEIS should assess the impacts of transporting and milling Mule Canyon ore and disposing of tailings at Twin Creeks on all resources, including air and water quality and wildlife mortalities. EPA was unable to find these impacts discussed in the Twin Creeks DEIS, which has been released for public review just recently.

The DEIS (pp. 2-36, 37) states that an expanded risk assessment is being conducted, the results of which will be included in the FEIS. The risk assessment conclusions will also be used to make further determinations regarding whether the South and West pits should be backfilled. Elsewhere, however, the DEIS states that the determination to backfill pits other than the Main Pit would only be made using additional information obtained through mine development. The DEIS should have included the expanded risk assessment and BLM's conclusions regarding the need for backfilling to mitigate potential impacts to water quality in each pit pond/lake. Without this information, the full scope of impacts, possible mitigation measures, and the effectiveness of those mitigation measures cannot be assessed. The FEIS should provide this information, indicate which pit(s) would be prioritized for backfilling (e.g., the Main Pit or the South and West pits), and include the rationale upon which these priorities are based (e.g., the risk assessment results, availability of neutralizing waste rock for above-ground waste rock piles, etc.). The FEIS should also provide more detail on the anticipated availability of oxide waste rock for pit backfilling and

neutralizing waste rock for the sulfide overburden/interburden dumps if pit backfilling occurs.

Alternatives

According to the DEIS (p. 2-37), the net total surface disturbance for all overburden and interburden disposal areas under the Main Pit backfill option would increase by approximately three acres. It is unclear why pit backfilling would end up increasing surface disturbance rather than decreasing it. The FEIS should clarify this.

The DEIS (p. 4-37) states that alternative D would involve inconsequential increases or decreases in the number of disturbed acres over the proposed alternative (+10 acres). Presumably this would apply to options E-1, E-2, and E-3 ((different overburden/interburden disposal area configurations, p. 2-12). EPA supports option E-3 because it appears that it would result in long-term slope stability, the most successful reclamation, and the least visual impacts. Reclamation is more likely to be successful on shallow slopes than on steep and/or benched side slopes. In addition, visual impacts would be reduced, particularly if angles are rounded and slopes are graded to include hummocks and contours similar to the natural contours of the local landscape. The insignificant amount of additional surface disturbance would, therefore, be justified.

Alternative G, the Total Backfill Alternative, was eliminated from further analysis in the DEIS based on operational, environmental, and economic factors. Although complete backfilling may not be practical or necessary, we recommend that BLM encourage the greatest amount of backfilling practicable. The reasons for eliminating Alternative G are not completely substantiated in the DEIS and should be discussed further in the context of additional backfill options other than backfilling only the Main Pit. We recommend the following considerations:

Operationally, the pits could be developed in such a way as to provide a steady stream of ore at the right blend to account for mill feed characteristics and backfill needs. Given five pits, several of which are long and narrow, there appears to be much flexibility to at least fill part of some of these pits (e.g., one end of a pit).

Filling pits to prevent the formation of pit lakes with poor quality water could prove a net benefit. However, the DEIS does not provide sufficient hydrogeologic information to determine exactly how this measure might

result in groundwater degradation or whether groundwater degradation from a backfilled pit would be worse than that from a pit lake.

Areas with greater concentrations of future ore reserves could be left unburied. However, future reserves would only be buried beneath a few hundred feet of waste rock which would be economical to remove if the economics of recovery change.

Geochemical Characterization and Water Quality

For purposes of this DEIS, potential acid producing material has been identified as any material having an acid neutralization potential/acid generation potential (ANP/AGP) of less than 1.2. However, we understand that BLM has recently developed a policy to use an ANP/AGP ratio of 3:1 as its threshold for potentially acid generating material. EPA supports BLM's use of 3:1 for the Mule Canyon project as well because we believe that an ANP/AGP of 3:1 should be used to account for uncertainty unless further kinetic testing has demonstrated that there is very little risk of acid generation for specific rock units.

The DEIS indicates that relatively few waste rock samples tested in humidity cells suggest acid-generating conditions. However, water discharged from the exploration adit has been of poor quality and characteristic of acid mine drainage (DEIS, p. 4-22). The FEIS should reconcile this information with the results of the bench-scale kinetic tests. Furthermore, the adit is only a few years old. It is unclear that the quality of water sampled to date has reached its worst potential or that a plume from the adit has had a chance to reach the downgradient monitoring points. The FEIS should indicate how far downgradient from the adit these monitoring points are located.

The FEIS should indicate how much of the overall waste rock would be acid-generating, how much of the sulfide waste rock would be acid generating, how much neutralizing material would be available for the sulfide dumps, and how many sulfide dumps are anticipated.

The DEIS (p. 2-36) refers to the acid neutralizing capacity of smectite clays. The FEIS should provide additional information regarding the actual testing results of the native clay that would be used at the Mule Canyon dumps for purposes of both acting as an impermeable layer under and over dumps as well as its acid neutralizing capacity. In addition, the FEIS should discuss how acidity would affect the clay structure and permeability over time.

According to the DEIS (p. 2-36), two to five feet of oxide material would be placed under each sulfide disposal area to act as a buffer between the sulfide material and underlying soils and as an underdrain. It is unclear that two to five feet of oxide material would effectively neutralize any acid generated for the entire waste rock dump. Not only should the oxide material be neutralizing, but the sulfide material should be admixed throughout the dump with neutralizing material to ensure sufficient neutralization of each dump.

According to the DEIS, preliminary overburden and interburden designations will be verified through ongoing operational sampling and analysis to provide for control and routing of waste rock to appropriate disposal locations (p. 2-34). There was no apparent correlation between lithology or alteration and humidity cell and column extract concentrations (DEIS, p. 3-24). Does this mean that visual characterization would not be used to characterize waste rock? The FEIS should describe the sampling and analysis frequencies and processes in detail.

Hydrology

Pit dewatering would result in lowering of the groundwater and reduction of flow from freshwater springs in the project area. The discussion in the DEIS (p. 4-28) regarding mitigation for springs is vague. The FEIS should discuss more specifically how the loss of springs in the project vicinity would be mitigated, including where the mitigation would take place to be most beneficial.

The FEIS should include a map depicting groundwater contours during and following mining operations.

Facilities Design

Waste Rock Piles

According to the DEIS (p. 3-23, 24), humidity cell and column test data indicate that several trace elements could be leached from the ore and waste rock. The Meteoric Water Mobility Procedure also suggested that leaching of mine materials could result in leachate concentrations for some constituents exceeding NDEP standards. We are concerned that the sulfide and oxide waste rock piles are not designed adequately to prevent infiltration of meteoric water, including snowmelt, into the piles and seepage out of them. In addition, it is unclear that the oxide and sulfide waste rock piles should be separate. We recommend that BLM consider the option of spreading the sulfide waste rock out among many piles in order to ensure adequate

isolation surrounded by, and/or admixing with, neutralizing rock. The FEIS should discuss this option.

It is unclear how five feet of oxide material over sulfide waste rock dumps would "minimize infiltration, oxidation, and leaching" (DEIS, p. 2-65). No specifications for cap permeability or neutralizing potential are provided. Furthermore, no specifications for permeability of water or acid are provided for waste rock dump bases. The FEIS should provide these specifications.

The FEIS should specify the minimum permeability of the waste rock pile underdrains and discuss how they would be prevented from clogging with the clay-rich sulfide overburden. Are there provisions for a filter fabric?

On page 2-36 of the DEIS, the pseudostatic evaluation of the overburden and interburden disposal piles is based on a peak seismic acceleration corresponding to the maximum credible event of 0.42g, while on page 3-15, the peak horizontal acceleration for the Maximum Credible Event is listed as .33g. The FEIS should rectify this apparent discrepancy.

The DEIS (p. 2-34, 65) states that a minimum slope of 0.5 percent would be adequate to promote effective drainage off of waste rock piles. This number is rather low and should be increased to a minimum of one to two percent in order to prevent ponding from poor grading quality control or fill settlement. Slopes greater than two percent can cause erosion.

Tailings Facility

The FEIS should specify the permeability of the tailings facility "composite soil liner." According to the DEIS (p. 4-16, 17), tailings water would contain concentrations of arsenic, copper, iron, selenium, and silver exceeding drinking water and/or aquatic life standards. It is not clear that facility design and reclamation measures would preclude leaching after closure. We believe that clay to a thickness of one foot and a permeability of 1×10^{-6} cm/sec is not practical in the field with large construction equipment (sheepsfoot compactor). A two-foot thick layer of clay to a permeability of 1×10^{-6} cm/sec is much more feasible. We recommend that the clay layer be specified as two feet thick. In addition, there is no specification for permeability for the reclaimed tailings cover. This should be included in the FEIS.

A factor of safety for the main tailings facility embankment is given in the DEIS (p. 2-49) as 1.0 for surface slumping and 1.2

for circular failure during initial construction before tailings placement in both pseudostatic and static conditions. In light of the importance of impounding potential cyanide-containing tailings, a factor of safety for the embankment of 1.0 seems rather low once tailings are impounded. The FEIS should discuss whether the factor of safety increases or decreases with the placement of tailings.

Heap Leach Pad

According to the DEIS (p. 4-15), heap leach material could produce leachate that exceeds drinking water standards for several constituents. Following leaching operations, spent ore would be rinsed until designated constituent concentrations in the rinsate decline to State specified threshold levels. The FEIS should specify what these threshold levels would be. If meteoric water would have the potential to leach metals and degrade groundwater quality following heap leach facility closure, closure/reclamation of the facility should include an impermeable cap beneath the growth medium layer.

Additional details regarding heap leach facility design should be included in the FEIS. It is unclear that 40-mil PVC is of sufficient thickness for a heap leach pad liner. What are PVC's advantages over HDPE for this application? What is the maximum particle size to be placed on the PVC liner? If PVC is used, it should not be exposed to the sun unless specifically designed for that purpose. With the availability of the smectite, a permeability of 1×10^{-6} cm/sec instead of 1×10^{-5} cm/sec is feasible and should be the target permeability of the secondary liner. The thickness of one foot for the smectite liner is not practical in the field with large construction equipment (sheepsfoot compactor). A layer of two feet is much more practical and appears to be obtainable based on the amount of fat clay available.

The heap leach pad overflow pond includes HDPE liners and an intermediate geonet over a four-inch "bedded layer" (DEIS, p. 2-42). The FEIS should describe how clogging of the geonet would be prevented. The FEIS should also specify the thickness of the HDPE liners.

Ore Stockpiles

The FEIS should specify the permeability of the native soil layer under the ore stockpile. This layer should be capable of precluding any leaching from the stockpile into the underlying substrate.

Biological Resources

The DEIS (p. 4-47) states that the pit dewatering holding ponds and ore stockpile sedimentation pond could exceed drinking water standards for several constituents. The DEIS further states that, given that these ponds would be located in areas where there would be considerable heavy equipment traffic and other human activity, wildlife use and exposure to these ponds would be limited to occasional opportunistic use with resultant low hazard exposure. This statement is unfounded in the DEIS in light of the fact that wildlife mortalities frequently occur at mine sites where heavy equipment and noise have not deterred pond use, particularly for birds. The FEIS should discuss the potential risks to wildlife from contact with water in these ponds and identify the wildlife exclusion measures that would be implemented if needed at the various ponds and water holding facilities on site.

The DEIS mentions that wetland habitat could establish in the shallow post-mining pit lakes. Given that drinking water and aquatic life standards are expected to be exceeded for certain constituents in these ponds, the FEIS should discuss in detail the results of the expanded risk assessment, the specific potential risks to wildlife, and mitigation measures that would effectively prevent these risks.

EPA REGION IX SUMMARY PARAGRAPH

ERP NUMBER: D-BLM-K67036-NV

CEQ NUMBER: 960222

DATE OF EPA COMMENT LETTER: 07/10/96

DATE SENT TO EPA HQ: 07/11/96

NAME OF PRINCIPAL REVIEWER: GESEL

NAME OF PROJECT EIS:

Mule Canyon Surface Gold Mine Development

SUMMARY PARAGRAPH:

expressed environmental objection

EPA ~~objected~~ to the proposed project based on its potential to ~~cause leaching of metals and other contaminants into surface water and groundwater if facilities are not designed properly.~~ We requested additional information in the the Final EIS regarding the impacts of transporting ore to Twin Creeks Mine for milling; the results of the ecological risk assessment; the selection of options for pit backfilling and waste rock pile design; design parameters for several mining and processing facilities; impacts to wildlife and springs; and mitigation measures.

→ *adversely affect surface and groundwater*

APPROVED FOR FEDERAL REGISTER PUBLICATION BY: _____

